

# National Spent Nuclear Fuel Database (SFD)

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# Purpose

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To provide a single source of information on DOE spent nuclear fuel (SNF) for national-level planning.

Use of this single source results in:

- **Consistency** - the data in all documents and plans is in agreement
- **Efficiency** - all data are readily available from one source
- **Improved data quality** - independent group to review all data



# Scope

- DOE SNF includes
  - DOE test, research, and production reactors
  - Foreign Research Reactors
  - Non-DOE owned U.S. research reactors
  - University reactors
  - Commercial reactors where the SNF was used for DOE or NRC test programs
  - Naval Nuclear Propulsion Program reactors
- Includes irradiated targets and blankets containing SNM
- Excludes SNF from commercial power reactors
- Current inventories and projections for 2035
  - Does not track historic data or transactions



# Users

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- NEPA
  - Programmatic SNF & INEL EIS
  - Site-specific EIS
  - Yucca Mountain EIS
- National SNF Program for documents, plans, etc.
- OCRWM for analysis of disposability at Planned Yucca Mt. Geological Repository
- Defense Programs for Pu study
- Response to stakeholders



# Contents

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- Quantitative Data
  - number of assemblies/canisters, etc., current and in 2035
  - BOL and EOL isotopic data for Th, U, and Pu
  - volume and gross mass for fuel and containers
- Locations
  - current and future storage locations



# Contents (continued)

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- Characteristics
  - composition of SNM, matrix, cladding, bonding, container, etc.
  - condition of cladding, fuel matrix, container
  - nature of irradiating reactor (licensing agency, reactor mission, coolant, moderator, etc.)
- Description and Discussion
  - dimensions of fuel and containers
  - irradiation (burnup, decay heat, etc.)
  - modifications and/or damage



# How Data are Obtained

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- SNF organization at each site provides data
  - SNF Operations records and databases
  - Receipt Criteria for FRR SNF
  - MC&A records and databases
- Additional data from reference documents
  - Research, Training, Test & Production Reactor Directory
  - IAEA Nuclear Reactor Directory
  - Numerous other references



# How Data are Verified

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- The ISNFDS team:
  - Develops data package that compares key data from various sources
  - Internally reviews their data packages
  - Performs data reasonableness tests
- Verified by others:
  - The SNF organization at each site reviews the relevant data
  - Site DOE MC&A offices verified key data in FY-95
  - QA visits to sites for survey of references for key data in FY-96





# How Data are Disseminated

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- Distribution by CD or download through Internet
- Response to special requests provided:
  - verbally
  - letter reports
  - electronically in user defined format



# Interface with other Databases

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- Integrated Data Base (IDB):
  - SFD provided SNF input to IDB electronically and hard-copy
- NMMSS and site-specific MC&A databases
  - Source of data in hard-copy format
  - Building-in compatibility for electronic interchange of data
- Site Specific databases



# SFD Environment

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- Microsoft Access database with Visual Basic screens
  - Easy and powerful user defined queries
  - Exporting capabilities
  - powerful reporting capability
- Building-in structural compatibility with other databases to allow electronic transfer of data
- Working towards version that runs on the Internet

